

(12) UK Patent Application (19) GB (11) 2 379 344 (13) A

(43) Date of A Publication 05.03.2003

(21) Application No 0121275.2

(22) Date of Filing 03.09.2001

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(51) INT CL⁷

G08B 21/00 // G01R 31/40 31/42

(52) UK CL (Edition V)

H2K KDX K252 K400

(56) Documents Cited

GB 2306065 A	GB 2256101 A
GB 2132429 A	EP 0109227 A
US 5663711 A	US 4255669 A
US 4097843 A	

(58) Field of Search

UK CL (Edition T) H2K KDX KFH
INT CL⁷ G01R 31/40 31/42, G08B 21/00
Other: Online: EPODOC, JAPIO, WPI

(54) Abstract Title

Electricity supply alarm for an electrical appliance

(57) A warning device 14 which may be detachably connected to an electrical energy supply 13, such as mains, having pins 16 which engage an electrical outlet 13 and a socket 17 to couple to the electrical plug 12A of an appliance, such as a freezer cabinet 11. Electricity is transmitted through the body of the device from the pins 16 to the corresponding part of the socket 17 by a conductor 18. A sensor 20 monitors the transmission of electricity through the conductor 18 and activates an alarm if either the flow is interrupted or begins. Alternatively the alarm may be triggered if the flow persists. The alarm consists of an audio buzzer 23 and a light bulb, or LED, 25 driven by a signal generator 22. A battery, or cell, 27 is incorporated into the device to power the alarm in the event of the electrical supply being interrupted.

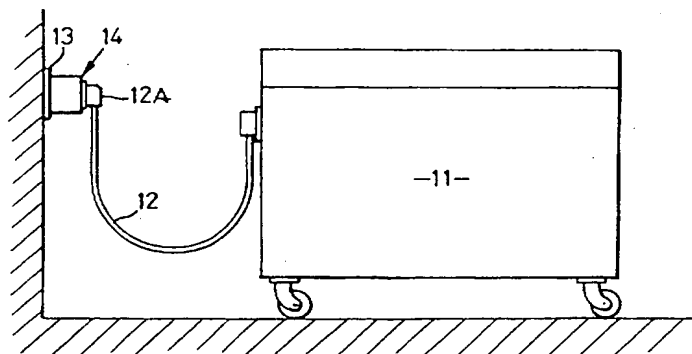


Fig. 1

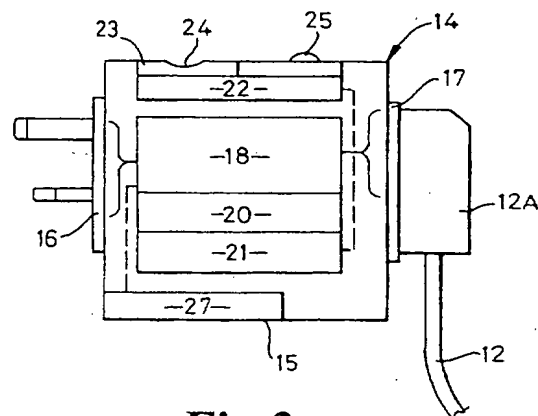


Fig. 2

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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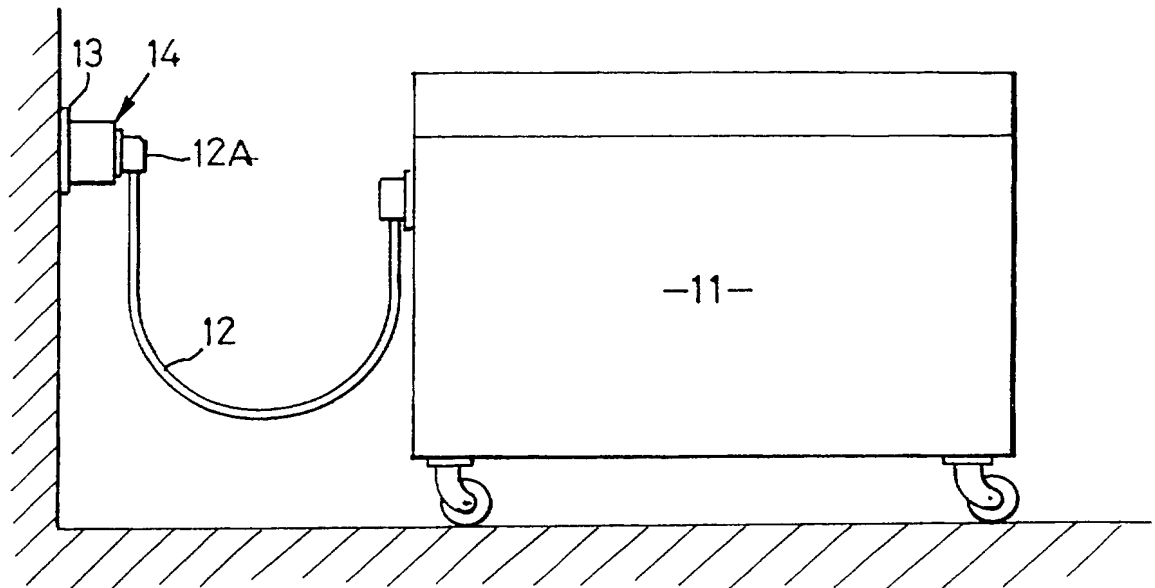


Fig. 1

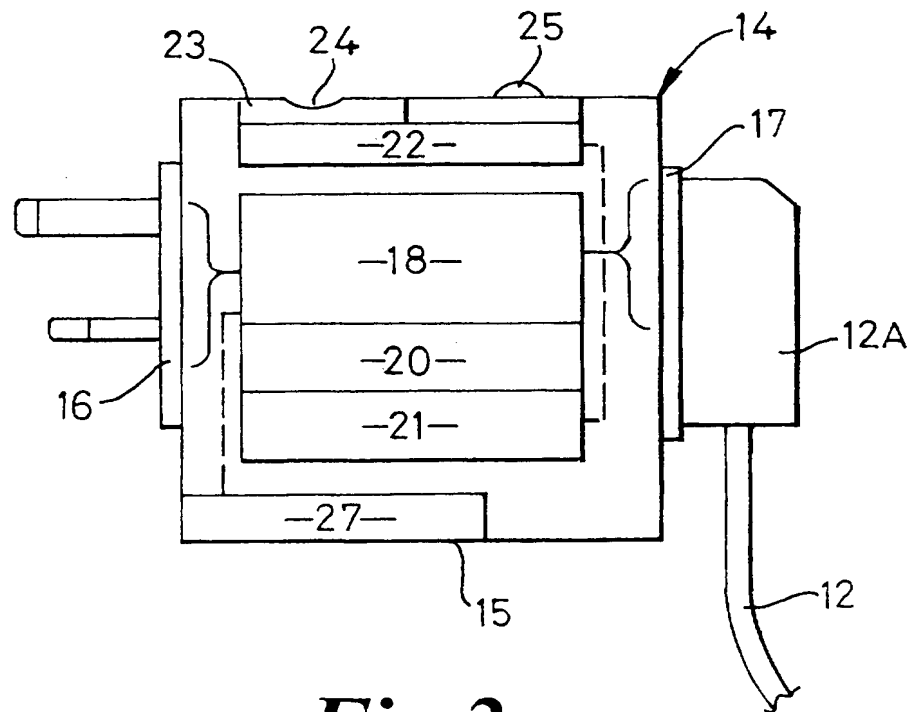


Fig. 2

WARNING UNIT

This invention relates to a warning unit. It is particularly concerned with a warning unit for use with an electrical supply system.

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There is frequently a requirement in a location involving the use of electrical power supply for a need for a warning to be generated when either a power supply has remained connected to, or has been inadvertently dis-connected from, an electrically power operated unit. By way of examples if an electric iron remains connected to a mains supply then the iron will maintain itself heated; of a freezer is inadvertently dis-
10 connected from a mains supply the temperature of perishables in the freezer cabinets will progressively rise leading to de-freezing of the goods and the generation of a substantial amount of water. Such events are undesirable and can lead to a need for expensive recovery and/or replacement quite apart from any safety hazard which
15 could arise.

According to the present invention there is provided a warning device comprising a unit for demountable connection to a supply of electricity having:

- an inlet to receive electrical power from the mains;
- 20 an outlet whereby electrical power can be passed out of the device from the inlet;
- conducting means linking the inlet to the outlet
- signal generating means;
- sensing means for monitoring the conducting means for the presence and/or absence of electrical energy.

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According to a first preferred version of the present invention the warning device is adapted so that in the event of a supply of power to the inlet: having previously been available is terminated then the sensing means causes the signal generating means to generate a warning signal.

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According to a second preferred version of the present invention the warning device is adapted so that in the event of a supply of power to the inlet being initiated the sensing means causes the signal generating means to generate a warning signal.

- 5 According to a third preferred version of the present invention or of any preceding preferred version thereof in which the warning device is in the form of a mains plug wherein the inlet is in the form of pins for insertion into a power supply socket.

- 10 According to a fourth preferred version of the present invention or of any preceding preferred version thereof wherein the outlet is in the form of a socket to which a plug for supplying power to a unit downstream of the plug by way of the device can be coupled.

- 15 According to a fifth preferred version of the present invention or of any preceding version thereof the signal generating means is powered from a power supply to which the device is connected by way of the inlet.

- 20 According to a sixth preferred version of the present invention or of the first, second, third or fourth versions thereof the warning device includes or is adapted to receive a battery for powering the signal generating means in the event of the inlet ceasing to receive power from the mains.

- 25 According to a seventh preferred version of the present invention or any preceding preferred version thereof the warning device incorporates means for regulating operation of the signal generating means.

An exemplary embodiment of the device will now be described with reference to the accompanying drawings of a warning device for use with a freezer installation of which:

- 30 Figure 1 is a diagram of the main components in the installation;

Figure 2 is a block diagram showing the components of the warning device;

Figure 1 shows a mains powered freezer cabinet 11 linked by a power cable 12 and a plug 12A to a mains supply wall socket 13 by way of a warning device 14 according to the present invention.

Figure 2 shows the warning device 14. The device 14 comprises a body member 15 with a conventional three pin array 16 whereby power can be supplied to the device 14. The device 14 is provided with an outlet 17 to receive a conventional plug. In this case plug 12A is coupled with outlet 17 so as to provide power to the freezer cabinet.

The terminals of three pin array 16 are each linked to the corresponding socket of outlet 17 by way of conducting means 18.

The presence or absence of power flowing through the conducting means 18 between array 16 and outlet 17 is detected by a sensing head 20 connected to a regulator 21.

A signal generating means 22 is mounted in the body member 15 to provide for the controlled emission of a periodic sound signal from buzzer 23 through aperture 24 and/or a periodic light signal from light 25. Operation of the signal generating means 22 is governed by regulator 21.

A re-chargeable battery unit 27 is incorporated in body member 15 and is kept charged for as long as power flows through conducting means 18.

In use the device 14 is plugged into wall socket 13. The plug 12A is then plugged into outlet 17 of the device 14 and power thereafter provided from the device 14 to the freezer cabinet 11 by way of cable 12. For as long as power continues to flow through the conducting means 18 of device the device 14 merely functions as connecting means.

In the event power ceases to flow through the conducting means 18, (for example due to mains supply failure to wall socket 13 or to the removal of the plug 12A from the device 14 or the removal of the device 14 from the wall socket 13) then the consequent absence of electrical supply to conducting means 18 is detected by sensing head 20
5 which functions to cause regulator 21 to connect battery unit 27 to buzzer 23 and/or light 25. As a result a clear sound and/or light warning signal is emitted by the device 14 to indicate the freezer 11 is now in a non-functioning condition with possible health and wastage consequences.

- 10 In this case the warning signal is only generated locally. However in the cases of a freezer remote from a location which is normally manned operation of the device 14 can be monitored remotely at the location by a sound and/or light sensing device.

The exemplary embodiment describes a device 14 which generates a warning signal
15 when a normal power supply is removed. For this purpose it needs a power source (battery 27) to generate the required warning signal.

In an alternative version the invention can be embodied in a device which emits a continuous or periodic signal for as long as power is flowing through the device. For
20 this purpose it would not necessarily require a separate power supply. Typically such a device could be used for domestic appliances such as irons, water or air heaters, cutting or abrading tools, cooking equipment, washing and other equipment involving a working cycle. Such a device would be particularly beneficial for example to individuals living alone, the partially sighted and the hard of hearing. The type of
25 alarm signal generated can be based on a wide range of possible generators. The fact of the power flowing for a unit at a position normally remote from the user can be monitored to provide a signal at a normally frequented location.

The described embodiment provides a device embodying the invention in a single
30 housing which is plugged into a wall socket and which in turn has plugged into it an

appliance plug from which power is fed to a power using appliance. It is also envisaged that that device can have the appliance plug incorporated into it so that an appliance is equipped with its own warning device. This is readily achieved since the components making up the described device are readily available in miniaturised form.

It is further envisaged that a device the subject of the present invention can incorporate a programmed or programmable component typically to serve in regulating operation of the device so that, for example, an alarm is generated only after an acceptable period has passed before initiating an alarm signal.

CLAIMS

1 A warning device comprising a unit for demountable connection to a supply of electricity having:

5 an inlet to receive electrical power typically from a mains supply;
an outlet whereby electrical power can be passed out of the device from the inlet;

conducting means linking the inlet to the outlet;

signal generating means;

10 sensing means for monitoring the conducting means for the presence and/or absence of electrical energy.

2 A warning device as claimed in Claim 1 adapted so that in the event of a supply of power to the inlet: previously having been available is terminated then the
15 sensing means causes the signal generating means to generate a warning signal.

3 A warning device as claimed in Claim 1 adapted so that in the event of a supply of power to the inlet being initiated the sensing means causes the signal
generating means to generate a warning signal.

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4 A warning device as claimed in any preceding claim in the form of a mains plug wherein the inlet is in the form of pins for insertion into a power supply socket.

5 A warning device as claimed in any preceding claim wherein the outlet is in the form of a socket to which a plug for supplying power to a unit downstream of
25 the plug by way of the device can be coupled.

6 A warning device as claimed in any preceding claim wherein the signal generating means is powered from a power supply to which the device is connected by way of the inlet.

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7 A warning device as claimed in any of preceding claims 1 to 5 including or adapted to receive a battery for powering the signal generating means in the event of the inlet ceasing to receive power from the mains.

5 8 A warning device as claimed in any preceding claim incorporating means for regulating operation of the signal generating means.

9 A warning device as hereinbefore described with reference to the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0121275.2
Claims searched: 1 to 9

Examiner: Mark Gainey
Date of search: 19 April 2002

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.T): H2K (KDX,KFH)
Int Cl (Ed.7): G01R(31/40,31/42), G08B(21/00)
Other: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2306065A	ASHLEY & ROCK p.2 paragraph 1 & 2, p.4 paragraph 3, figures 4 & 5	1,2,4
X	GB 2256101A	JACKSON p.2 paragraph 3, p.3 paragraph 1 & 3, p.8 paragraph 2 & 3 and figures 1 & 2	1,2,4,5,7
X	GB 2132429A	BROWN p.1 ll.7-18, ll.32 - 46, ll.57 - 59, p2. ll.16 - 28, p.3 ll.68 - 72	1,2,4,5,6,7
X	EP 0109227A	VIDEO ALARMS & SYSTEMS p.1 ll.3 -24, figure 1	1,2,4,5,7
X	US 5663711	SANDERS et al. col.1 l.65 - col.2 l.3 col.2 ll.34 - 39, ll.45 - 49, col. 3 ll.10 -17, ll. 51 - 57 and figures 1, 2 & 3	1,2,4,5,6,7,8
X	US 4255669	NAUGLE col.4 ll.24 - 26, ll. 36 - 40 and figure 2	1,3,4,5
X	US 4097843	BASILE col.1 ll.13 -17, ll. 20 - 42 col.3 ll.18 - 26 and figures 1, 2 & 4	1,4,5,7

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.